CLAIMS

1. An integrated circuit comprising a biasing circuit for maintaining the transconductance of a Gm cell constant, the integrated circuit comprising an on-chip constant voltage source and an on-chip constant current source, the on-chip constant current source having a connection for an external resistance, the value of the external resistance determining the current generated by the constant current source, characterised in that the biasing circuit comprises:

means for providing a first fraction (β) of the current generated by the on-chip current source to bias the output of the Gm cell;

means for providing a second fraction (α) of the voltage generated by the on-chip voltage source to bias the input of the Gm cell; and

means for controlling the transconductance of the Gm cell to be equal to the ratio of said fraction of the current generated by the on-chip current source to said fraction of the voltage generated by the on-chip voltage source.

2. An integrated circuit as claimed in claim 1, wherein the means for controlling the transconductance comprises a feedback circuit including an amplifier, the amplifier providing a control signal (39) for controlling the transconductance of the Gm cell.

3. An integrated circuit as claimed in claim 2, wherein the control signal (39) is a current signal.

4. An integrated circuit as claimed in claim 2, wherein the control signal (39) is a voltage signal.

5. An integrated circuit as claimed in any one of the preceding claims, wherein the means for providing a fraction (α) of the on-chip voltage source comprises first and second transistors (68, 69), the first and second transistors having a gain ratio of 1:n.

6. An integrated circuit as claimed in claim 5, wherein the gain n of the second transistor (69) is predetermined according to the transconductance characteristics of the Gm cell being controlled.

7. An integrated circuit as claimed in any one of the preceding claims, wherein the means for providing a fraction (β) of the on-chip current source comprises a transistor (55).

8. An integrated circuit as claimed in claim 7, wherein the gain m of the transistor (55) is chosen according to the transconductance characteristics of the Gm cell being controlled.

9. An integrated circuit as claimed in any one of the preceding claims, wherein the on-chip current source and on-chip voltage source are generated using the same voltage reference, such that the transconductance of the Gm cell is equal to the ratio of the first fraction (β) to the second fraction (α) divided by the value of the external resistor (51).

10. An integrated circuit as claimed in any one of claims 2 to 9, further comprising a second Gm cell, the second Gm cell providing a common mode operating point

voltage at the input of the first Gm cell, the second Gm cell also being controlled by the control signal (39).

11. An integrated circuit as claimed in claim 10, wherein the components forming the second Gm cell are matched with the components forming the first Gm cell.

12. An integrated circuit as claimed in any one of claims 1 to 9, wherein the fraction (β) of the on-chip current source is connected differentially to the output of the Gm cell, and wherein the fraction (α) of the on-chip voltage source is connected differentially to the input of the Gm cell.

13. An integrated circuit as claimed in claim 2, wherein the control signal 39 is also used to control another Gm cell of the same design on the integrated circuit.

14. An integrated circuit as claimed in claim 2, wherein the control signal 39 is used to control another Gm cell on the integrated circuit, the design characteristics of the other Gm cell having a predefined ratio to the design characteristics of the first Gm cell.

15. A method of maintaining the transconductance of a Gm cell on an integrated circuit constant, the integrated circuit comprising an on-chip constant voltage source and an on-chip constant current source, the on-chip constant current source having a connection for an external resistance, the value of the external resistance determining the current generated by the

constant current source, characterised in that the method comprises the steps of:

providing a first fraction (β) of the current generated by the on-chip current source to bias the output of the Gm cell;

providing a second fraction (α) of the voltage generated by the on-chip voltage source to bias the input of the Gm cell; and

controlling the transconductance of the Gm cell to be equal to the ratio of said fraction of the current generated by the on-chip current source to said fraction of the voltage generated by the on-chip voltage source.

16. A method as claimed in claim 15, wherein the step of controlling the transconductance comprises providing a feedback circuit including an amplifier, the amplifier providing a control signal (39) for controlling the transconductance of the Gm cell.

17. A method as claimed in claim 16, wherein the control signal (39) is a current signal.

18. A method as claimed in claim 16, wherein the control signal (39) is a voltage signal.

19. A method as claimed in any one of claims 15 to 18, wherein the step of providing a fraction (α) of the on-chip voltage source comprises providing first and second transistors (68, 69) having a gain ratio of 1:n.

20. A method as claimed in claim 19, further comprising the step of setting the gain n of the

transistor (69) according to the transconductance characteristics of the Gm cell being controlled.

21. A method as claimed in any one of claim 15 to 20, wherein the step of providing a fraction (β) of the on-chip current source comprises providing a transistor (55) to generate the fraction (β) of the on-chip current source.

22. A method as claimed in claim 21, further comprising the step of setting the gain m of the transistor (55) according to the transconductance characteristics of the Gm cell being controlled.

23. A method as claimed in any one of claim 15 to 22, wherein the on-chip current source and on-chip voltage source are generated using the same voltage reference, such that the transconductance of the Gm cell is equal to the ratio of the first fraction (β) to the second fraction (α) divided by the value of the external resistor (51).

24. A method as claimed in any one of claims 16 to 23, further comprising the step of providing a second Gm cell, the second Gm cell providing a common mode operating voltage to the input of the first Gm cell, the second Gm cell also being controlled by the control signal (39).

25. A method as claimed in claim 24, further comprising the step of matching the components forming the second Gm cell with the components forming the first Gm cell.

26. A method as claimed in any one of claims 15 to 23, further comprising the step of connecting the fraction (β) of the on-chip current source differentially to the output of the Gm cell, and connecting the fraction (α) of the on-chip voltage source differentially to the input of the Gm cell.

27. A method as claimed in claim 16, wherein the control signal 39 is also used to control another Gm cell of the same design on the integrated circuit.

28. A method as claimed in claim 16, wherein the control signal 39 is used to control another Gm cell on the integrated circuit, the design characteristics of the other Gm cell having a predefined ratio to the design characteristics of the first Gm cell.